ABSTRACT AN OPTICAL WAVEGUIDE STRUCTURE

A waveguide structure according to the invention comprises a core layer (10), having a refractive index n_{core} , and an array of rods (11) in the core layer having a refractive index n_{rods} . The refractive indices satisfy the inequality:

In a planar waveguide structure buffer (12) and cladding (13) layers are included, having a refractive index n_{buffer} and n_{cladding} respectively. The refractive indices then satisfy the inequality:

$$n_{rods} > n_{core} > n_{cladding}$$
 and n_{buffer} .

This condition provides greater vertical confinement of the E-field of an optical signal passing through the waveguide. Furthermore, it allows waveguides to be formed of a glassy material having a similar refractive index and core dimensions to that of a fibre. A high refractive index contrast within the photonic crystal region is used while totally eliminating the need for mode conversion to launch light in and out of the waveguide.

(Figure 2)

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